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EPA Superfund
Explanation of Significant Differences:

KIN-BUC LANDFILL
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OU 02
EDISON TOWNSHIP, NJ
08/16/2001

Explanation of Significant Differences
Kin-Buc Landfill Superfund Site

Site Name and Location

Kin-Buc Landfill
Edison Township
Middlesex County, New Jersey

Introduction

The U.S. Environmental Protection Agency (EPA) presents this Explanation of Significant Differences (ESD) to explain modifications to the remedy selected in the September 28, 1992, Record of Decision (ROD) for the Kin-Buc Landfill Superfund site. In particular, this ESD explains changes to the Operable Unit 2 remedy relating to the Mound B area of the landfill.

EPA is the lead agency for this site. The New Jersey Department of Environmental Protection (NJDEP) is the support agency.

This ESD is issued in accordance with Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. § 9617(c), and Section 300.435(c)(2)(i) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. § 300.435(c)(2)(i), which contains provisions for addressing and documenting changes that occur to a remedy after a ROD is signed.

This ESD, and the documents that form the basis for the decision to modify the remedy, will be incorporated into the Administrative Record maintained for the site in accordance with Section 300.825(a)(2) of the NCP. The Administrative Record is available for review during normal business hours at the following site repositories: the Edison Township Public Library, 340 Plainfield Avenue, Edison, New Jersey 08817, Monday through Thursday from 9:00 AM to 9:00 PM, Friday and Saturday 9:00 AM through 5:00 PM, and the U.S. EPA Records Center, 290 Broadway - 18th floor, New York, New York 10007-1866, (212) 637-4380, Monday through Friday from 9:00 AM to 5:00 PM.

Site History, and Contamination Problems

The Kin-Buc Landfill Superfund site is located at the end of Meadow Road, Edison Township, Middlesex County, New Jersey. The site is bordered on the south by the Edison Township Landfill, on the east by wetlands and the inactive ILR landfill, on the west by the Raritan River, and on the north by the Edison Salvage Yard, the Edison Township boat launch, and a chemical manufacturing plant. The Edgeboro Landfill is located across the Raritan River from the Kin-Buc and Edison landfills. The Heller Industrial Park, a light-industrial and commercial complex, is located approximately one mile to the north of the site.

The landfilled areas associated with the site are the Kin-Buc I and Kin-Buc II mounds; an area east of Kin-Buc I referred to as Pool C; the Low-Lying Area, which begins just south of Kin-Buc I; and Mound B, which is on the Raritan River south and west of Kin-Buc I and the Low-Lying Area. The following adjacent areas have also been affected by contaminant migration from the site: Edmonds Creek, the wetlands associated with Edmonds Creek, and Mill Brook/Martins Creek (see Figure 1).

The Kin-Buc I mound covers approximately 30 acres and rises to a maximum elevation of approximately 93 feet above mean sea level (MSL). The Kin-Buc II mound, just north of Kin-Buc I, covers about 12 acres and rises to approximately 51 feet above MSL. Mound B covers approximately nine acres along the shoreline of the Raritan River with an elevation of approximately 15 to 20 feet above MSL.

Landfilling began at the site in about 1947. Kin-Buc, Inc. started operating there in 1968. Between 1971 and 1976, Kin-Buc, Inc. operated the site as a state-approved landfill for industrial (solid and liquid) and municipal wastes. Hazardous wastes were disposed in the main landfill mound, Kin-Buc I, as well as in Kin-Buc II. In 1976, the New Jersey Department of Environmental Protection (NJDEP) revoked Kin-Buc's permit to operate because of violations of both state and federal environmental statutes. Little is known of the waste disposal history of Mound B, other than the fact that primarily municipal wastes were buried in the Mound.

EPA's involvement with the site began in 1976 during the investigation of an oil spill at the site, which revealed the discharge of hazardous substances from the facility. EPA filed

initial charges against the owner-operators in 1979, under such statutes as the Water Pollution Control Act and the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act (RCRA). Under a 1980 partial settlement, Kin-Buc, Inc. (and not the other defendants) agreed to install a landfill cap and initiate a long-term monitoring program, but not to remediate the site or control the further migration of contaminants in the area. Therefore, in 1980, EPA initiated cleanup activities under Section 311 (k) of the Clean Water Act, collecting aqueous and oily leachate from the Pool C area for treatment and disposal.

In September 1982, Kin-Buc, Inc. assumed the removal operation at the Pool C area that EPA had been conducting since February 1980. In addition, EPA attempted negotiations for performance of the remedial investigation and feasibility study (RI/FS) with Kin-Buc, Inc. However, negotiations were unsuccessful and, on September 23, 1983, EPA issued a Unilateral Administrative Order (Findings of Fact, Determination and Order Docket No: II-CERCLA-30102) against the 11 initial defendants of the 1979 civil action, directing the parties to perform the RI/FS. Also, in September 1983, the site was added to the National Priorities List.

Operable Unit 1

In May 1984, a draft RI/FS was submitted to EPA by the Respondents to the 1983 Order. On March 25, 1986, EPA issued an amended Unilateral Administrative Order (Findings of Fact, Determination, and Amended Order Docket No: II-CERCLA-60105) updating the 1983 Order to require the potentially responsible parties (PRPs) to follow newly issued guidance on the conduct of an RI/FS. A revised draft OU1 RI was submitted in April 1988 and approved by EPA. The RI identified highly contaminated landfill leachate and groundwater contamination emanating from the refuse in the Kin-Buc I and Kin-Buc II mounds, containing volatile and semi-volatile organic compounds (VOCs and SVOCs), metals, pesticides, and polychlorinated byphenyls (PCBs). These constituents appeared to have migrated from the Kin-Buc I and Kin-Buc II mounds toward the Low-Lying Area, Mound B, and the Raritan River to the west, and Pool C and the Edmonds Creek marsh to the east. The RI also concluded that the landfill closure efforts were inadequate and that releases from the source areas was continuing. A draft FS was submitted in May 1988.

The EPA issued the first of two Records of Decision for the site on September 30, 1988. This first ROD divided the site into two

remedial phases known as operable units: Operable Unit 1 (OU1) consists of the Kin-Buc I and II mounds, as well as portions of the Low-Lying Area (between Kin-Buc I and the Edison Landfill) and Pool C (see Figure 1). The selected remedial action for OU1 consisted of the following components:

- installation of a circumferential slurry wall to bedrock on all of the sides of the site;
- maintenance, and upgrading if necessary, of the Kin-Buc I cap and installation of a cap in accordance with RCRA Subtitle C and State requirements on Kin-Buc II, portions of the Low-Lying Area between Kin-Buc I and the Edison Landfill, and Pool C;
- collection and off-site incineration of oily phase leachate;
- collection and on-site treatment of aqueous phase leachate and contaminated groundwater with disposal via direct surface water discharge;
- periodic monitoring; and
- operation and maintenance.

The second operable unit (OU2) included adjacent areas affected by contaminant migration from the landfill, including Mound B, the Low-Lying Area, Edmonds Creek, and the wetlands associated with Edmonds Creek, and Mill Brook/Martins Creek. The OU1 ROD required that an RI/FS be conducted for these OU2 areas.

Remedial Action for OU1

The OU1 Remedial Action was performed by the two main groups of PRPs for the site, Transtech, Inc. (formerly Kin-Buc, Inc.) and certain of its affiliated companies, and SCA Services, Inc., a subsidiary of Waste Management, Inc., and certain of their affiliates, under a September 21, 1990 Unilateral Administrative Order (Administrative Order, Index No. II-CERCLA-00114). Construction was initiated in June 1993. The slurry wall and landfill cap were substantially completed in May 1995, and the leachate collection and groundwater treatment system started operation in April 1995. A Remedial Action Report for the OU1 remedy was approved by EPA on May 9, 1997.

Operable Unit 2

The OU2 RI/FS was conducted by the Respondents to the 1990 Order. This investigation focused on evaluating the nature and extent of: groundwater contamination in the Low-Lying Area and Mound B; wetlands contamination in the Edmonds Creek/Marsh system; and surface-water contamination in Edmonds Creek and Mill Brook/Martins Creek. The OU2 RI/FS was completed in July 1992.

Results of the OU2 RI

The OU2 RI identified the following geologic profile (from top to bottom) in the Low-Lying Area and Mound B: surficial cover material (between one and nine feet thick), refuse (between seven and 24 feet thick), a layer of organic-rich clay and silt known as "meadow mat" (approximately seven feet thick), gravel, and bedrock. Prior to installing the slurry wall, groundwater flowed radially from the Kin-Buc I mound toward the Pool C area, the Edison Landfill, and the Raritan River, and was not tidally influenced by the river. The underlying meadow mat layer was identified as a semi-confining layer; its fine-grained organic-rich matrix exhibited very low permeability, indicating that groundwater does not readily flow in this unit either vertically or laterally. The sand and gravel unit was found to be in direct hydraulic contact with the river, and is therefore affected by tidal influences. At low tide, groundwater in this unit flows across the site from southeast to northwest. At high tide, this flow is reversed when groundwater flows from Mound B toward the Low-Lying Area. However, net flow is west, towards the river. Groundwater flows in the bedrock unit towards the south; though bedrock flow is tidally influenced in the vicinity of the site, causing a general oscillation of flow in the Mound B and Low-Lying areas. Vertical gradients within the four units indicate that net discharge from these units is to the Raritan River, either directly or indirectly.

VOC and SVOC contaminants were found in the refuse unit leachate similar to the contaminants found emanating from Kin-Buc I and Kin-Buc II. The sand-and-gravel unit contained similar VOCs and SVOCs as were found in the refuse unit, although at lower concentrations. These constituents also appear to have migrated from the landfill mounds. The bedrock unit contained very low levels of VOCs, which may also be attributed to migration from Kin-Buc I.

The OU2 RI/FS and Proposed Plan for OU2 were released to the public for comment on July 15, 1992. The ROD for OU2 was issued on September 28, 1992. The major components of the selected remedy for OU2 included:

- excavation of approximately 2,200 cubic yards of sediments containing PCBs at levels greater than 5 parts per million;
- consolidation of the excavated sediments within the OU1 containment system;
- restoration of wetlands areas impacted by the excavation of contaminated sediments; and
- long-term monitoring of ground and surface water to ensure the effectiveness of the remedy.

The ROD for OU2 called for maintenance of the existing cover over Mound B and monitoring of groundwater underlying it. The existing clay cap over Mound B was considered adequate to prevent water infiltration from coming into contact with the refuse, and it was believed that the source of groundwater contamination to this area was primarily from the Kin-Buc I and II Mounds and other areas addressed by the OU1 ROD, and would be mitigated by the OU1 remedial action. Furthermore, EPA did not develop remedial action objectives for groundwater or surface water in the OU2 ROD, because the implementation of source control provided for in the OU1 remedial action, including a slurry wall and cap, was expected to be sufficient to prevent further migration of contaminants into the Mound B area. In addition, it was unlikely that the groundwater would be used for human consumption, given the proximity of the Edison Landfill immediately to the south of Kin-Buc and the defunct ILR Landfill in the eastern side of the Edmonds Creek wetlands, which limit the future development of this area for residential purposes.

Since it appeared highly unlikely that any exposure pathways would exist in the foreseeable future, EPA did not believe that there were any actual or plausible potential site risks associated with groundwater which could justify active response measures to reduce contaminant concentrations in groundwater. In addition, groundwater modeling conducted during the FS indicated that natural processes, such as degradation, dispersion, and dilution, would gradually reduce contaminant concentrations to

acceptable levels in the sand and gravel aquifer and in the refuse layer. Contaminants in the bedrock aquifer were already at acceptable levels. Finally, contaminant transport modeling for both the Mound B and Low-Lying Area indicated that levels of contaminants drop most rapidly in the Low-Lying Area (MCLs may be attained within 50 years) and less quickly within the Mound B area. However, over time, compliance with federal and state groundwater quality standards will be achieved.

Remedial Action for OU2

The Remedial Action for OU2 was initiated in June 1994 by SCA, under a November 19, 1992 Unilateral Administrative Order (Administrative Order Index No. II-CERCLA-93-0101; the "1992 Order"). Approximately 9,400 cubic yards of PCB-contaminated sediments were excavated from five separate zones located within the Edmonds Creek/Marsh system where PCB concentrations exceeded the cleanup goal of 5 parts per million (ppm). The excavated sediments were placed within the OU1 slurry wall, and the wetland areas were then restored. A Remedial Action Report for the OU2 Remedial Action was approved by EPA on January 1996.

Discussion of Significant Differences

The differences between the remedy selected in the 1992 OU2 ROD and the actions described in this ESD are a result of the discovery and removal of buried drums in Mound B that were a potential source of groundwater contamination. The differences are significant, but not fundamental.

Boring logs taken during the OU2 RI/FS indicated that the primary components of the fill in the Mound B area were municipal and household refuse and debris. EPA's investigations at that time concluded that the primary continuing sources of groundwater contamination at the site were the Kin-Buc I and II Mounds and the other areas to be addressed by the OU1 remedy. The RI/FS indicated that the contributions of the Kin-Buc site to groundwater contamination would be mitigated after the construction of the OU1 source control remedial action.

In 1995, during the excavation activities associated with installation of the outfall line for the OU1 leachate treatment plant, seven buried drums were discovered at the southern edge of Mound B, at a location 75 to 100 feet from the Raritan River. As a result, in June 1997, EPA initiated a supplemental Mound B

investigation by collecting groundwater, and surface and subsurface soil samples from Mound B. The groundwater samples were collected from four monitoring well clusters installed in and around Mound B as part of the site's groundwater monitoring program. The groundwater contamination was found to be consistent with the levels detected previously in these wells. None of the seven surface soil samples showed concentrations above NJDEP Non-Residential Direct Contact Soil Cleanup Criteria[1]. At six of 30 subsurface (two foot) sample locations, arsenic was found in excess of the NJDEP Non-Residential Soil Cleanup Criterion of 20 parts per million (ppm), with levels as high as 104 ppm.

In November 1997, EPA excavated four test trenches along the southwestern area of Mound B near where the drums were discovered in 1995. The four test trenches varied in size from 155 to 230 feet in length and were approximately nine to 13 feet deep. One test pit had no drums. In the other three pits, 49 drums were identified and removed, and 46 drum carcasses were found. The drums that still held at least part of their original contents had tears, rips and were in advanced stages of deterioration. The drum carcasses were severely crushed and contorted. The drums were overpacked for off-site disposal, and the drum carcasses were returned to Mound B. Four soil/refuse samples were collected from each test pit. None of the samples from the pits showed concentrations above NJDEP Non-Residential Direct Contact Soil Cleanup Criteria. However, several samples from some of the recovered drums contained elevated levels of benzene, toluene, and xylenes.

In January 1998, a geophysical survey of Mound B was conducted, identifying a number of subsurface anomalies that might indicate the presence of additional buried drums. In May 1998, based on the geophysical survey results, 14 exploratory trenches were dug to investigate the nine most distinct anomalies. The 14 trenches varied in size from 23 to 145 feet in length and approximately 5 to 13 feet deep. Of the 14 trenches, six trenches contained no

[1/] While Table 8 of the OU2 ROD identified 16 Chemicals of Concern in the sediments, surface water and groundwater, including VOCs, SVOCs, DDT, PCBs, and metals, the OU2 ROD only established one cleanup goal of 5 ppm PCBs in sediments. During the various Mound B investigations, the New Jersey Impact to Groundwater Soil Cleanup Criteria and Non-Residential Direct Contact Cleanup Criteria are used here for screening purposes only.

drums or drum carcasses, seven contained five or fewer drum carcasses, and one trench contained 11 drums and 3 drum carcasses. A total of 32 drums and 22 drum carcasses were found in the 14 trenches. As in 1997, the drums that still had at least part of their original contents were in poor condition. One leaking drum was overpacked for off-site disposal; the remainder of the drums contained solids, and all remaining drums and drum carcasses were returned to Mound B. A total of 13 drum waste samples (including one duplicate) were collected. Results indicated that hazardous substances, including VOCs, SVOCs and metals were found in excess of the New Jersey Non-Residential Direct Contact Cleanup Criteria or Impact to Groundwater Cleanup Criteria in drums at each of the identified anomalies. EPA concluded from these findings: (1) that the investigation of subsurface anomalies identified in the geophysical investigation provided a basis for identifying the presence of additional buried drums; and (2) that at least some of the drums still buried in Mound B contained hazardous substances which could serve as a continuing source of contaminants to groundwater and ultimately to the Raritan River.

Modified Remedy

Based upon the post-ROD investigations compiled in the Mound B Supplemental Investigation Report, as found in the Administrative Record, EPA determined that additional drums remained in Mound B that are a potential source of groundwater contamination (i.e., drums that pose a threat of release of contaminants into the environment). Thus, EPA directed the Respondents to locate and remove as many of these drums as practicable. The Respondents submitted a Mound B Work Plan in November 2000. In January 2001, EPA approved, with conditions, the Mound B Work Plan.

The Work Plan analyzed the remaining uninvestigated subsurface anomalies identified in EPA's geophysical survey, compared the results of the 1997 and 1998 test trenches to the geophysical findings, and identified seven anomalies where trenching was called for. In addition, because all of the earlier trenches and the subsurface anomalies were concentrated on the southern and central portion of Mound B, EPA required an additional trench on the northern portion of the landfill to assure that the landfill had been adequately investigated. In all, eight separate trenching locations were identified in the Work Plan. The field work began in April 2001. EPA oversaw the field activities, which were substantially complete by May 2, 2001.

The trenches varied in size from approximately 18 feet to 110 feet in length and six to 10.5 feet deep, stopping at the water table. Of the eight trenches, two trenches contained no drums or drum carcasses, three contained five or fewer drum carcasses, and three trenches contained the bulk of the material: 30 drums and 75 drum carcasses. As the trenches were opened, any drums found in sidewalls were also removed. Approximately 38 drums and 77 drum carcasses were found in the eight trenches. The drums were unearthened and bulked together for off-site disposal. The excavated landfill refuse along with the drum carcasses were placed back in the landfill and the landfill cap was restored.

In an effort to compare the profile of these trenches with those excavated in 1997 and 1998, EPA again collected sidewall waste material samples in five of the trenches, at the rate of four samples per trench. Results indicate that hazardous substances, including VOCs, SVOCs and metals were found in excess of the New Jersey Non-Residential Direct Contact Cleanup Criteria or Impact to Groundwater Cleanup Criteria in each of the sampled trenches; however, these results are consistent with the findings from the earlier Mound B investigations, and are consistent with EPA's expectations of the contents of this landfill.

Groundwater and solid waste sampling in Mound B during the recent post-ROD investigations has not shown a pattern of high levels of contamination (i.e., levels that would indicate substantial continuing sources of groundwater contamination) in Mound B. The results of the groundwater and surface water monitoring performed to date are summarized in quarterly and annual monitoring reports prepared by the Respondents as part of the monitoring requirements of the OU2 ROD. The monitoring to date shows that, in general, there are no trends in the water quality data which would indicate that the remedy is not protective. These reports have been placed in the Administrative Record for the site.

In addition, while excavations in Mound B did reveal drums and drum carcasses not originally contemplated by the OU2 ROD, the general nature of the waste found is consistent with that described in the OU2 ROD – that is, primarily municipal and household refuse and debris.

In short, while significant additional work was required to properly dispose of additional drums at Mound B, that work is fundamentally consistent with the remedy selected in the ROD.

Therefore, EPA has determined that, under Section 117 of CERCLA, 42 U.S.C. § 9617, and 40 C.F.R. § 300.435(c), it is appropriate to issue this ESD, but that a ROD amendment is unnecessary.

In addition, other activities are planned for Mound B that are consistent with the OU2 ROD and do not require an ESD. The Respondents, in cooperation with the Township of Edison, are planning shoreline improvement activities along the Mound B portion of the Raritan River. Because Mound B is very close to the river, natural erosion periodically exposes garbage along Mound B. This shoreline improvement will involve excavating some of the waste material closest to the river, regrading and replacing the landfill cap in this area, and installing a vegetation barrier on the shoreline to limit future erosion.

The OU2 ROD calls for maintaining the existing clay cap on Mound B. SCA has proposed the replacement of this clay cap with a vegetative cap or "tree cap", made up of a fast-growing, deep-rooted hybrid poplar trees planted into specially prepared soils. This alternative cap method has been used at other landfills. EPA has indicated that the change to this alternative type of cap would be acceptable at Mound B, and SCA plans to start upgrading the Mound B cap later in 2001.

Support Agency Comments

The State of New Jersey concurs with the modified remedy as described in this ESD, contingent upon the following Technical Requirements for Site Remediation (N.J.A.C. 7:26E et seq.): Electronic Data Submittal of all data generated during the activities; application for and issuance of a Classification Exception Area in areas where Groundwater Quality Criteria are exceeded; and the application for and issuance of permit equivalencies for those actions that require them.

Affirmation of Statutory Determinations

Considering the new information that has been developed and the changes that have been made to the selected remedy, EPA and NJDEP believe that the remedy remains protective of human health and the environment, complies with federal and state requirements that were identified in the ROD and this ESD as applicable or relevant and appropriate to this remedial action, and is cost effective. In addition, the modified remedy utilizes permanent solutions and alternative treatment technologies to the maximum

extent practicable for this site.

Finally, as required by the OU2 ROD, a review of the remedy will be conducted every five years to ensure that the remedy continues to provide adequate protection of human health and the environment.

Public Participation Activities

As discussed above, EPA has determined that the additional Mound B work is significantly, but not fundamentally, different from the remedy selected in the ROD; therefore, in accordance with the NCP, an ESD is appropriate. An ESD does not require a formal public comment period. Nevertheless, pursuant to Section 300.435(c)(2)(i) of the NCP, EPA will make the ESD available to the public by publishing a notice and summary of it in a major local newspaper, the Home News and Tribune, and by placing it with supporting documentation in the Administrative Record for the site. The Administrative Record is available for public review during business hours at the following site repositories: the Edison Township Public Library, 340 Plainfield Avenue, Edison, New Jersey 08817, and the EPA Records Center, 290 Broadway – 18th floor, New York, New York 10007-1866, Monday through Friday from 9:00 AM to 5:00 PM.

William J. Muszynski, P.E.
Acting Regional Administrator
U.S. Environmental Protection Agency
Region II

8/16/01
Date

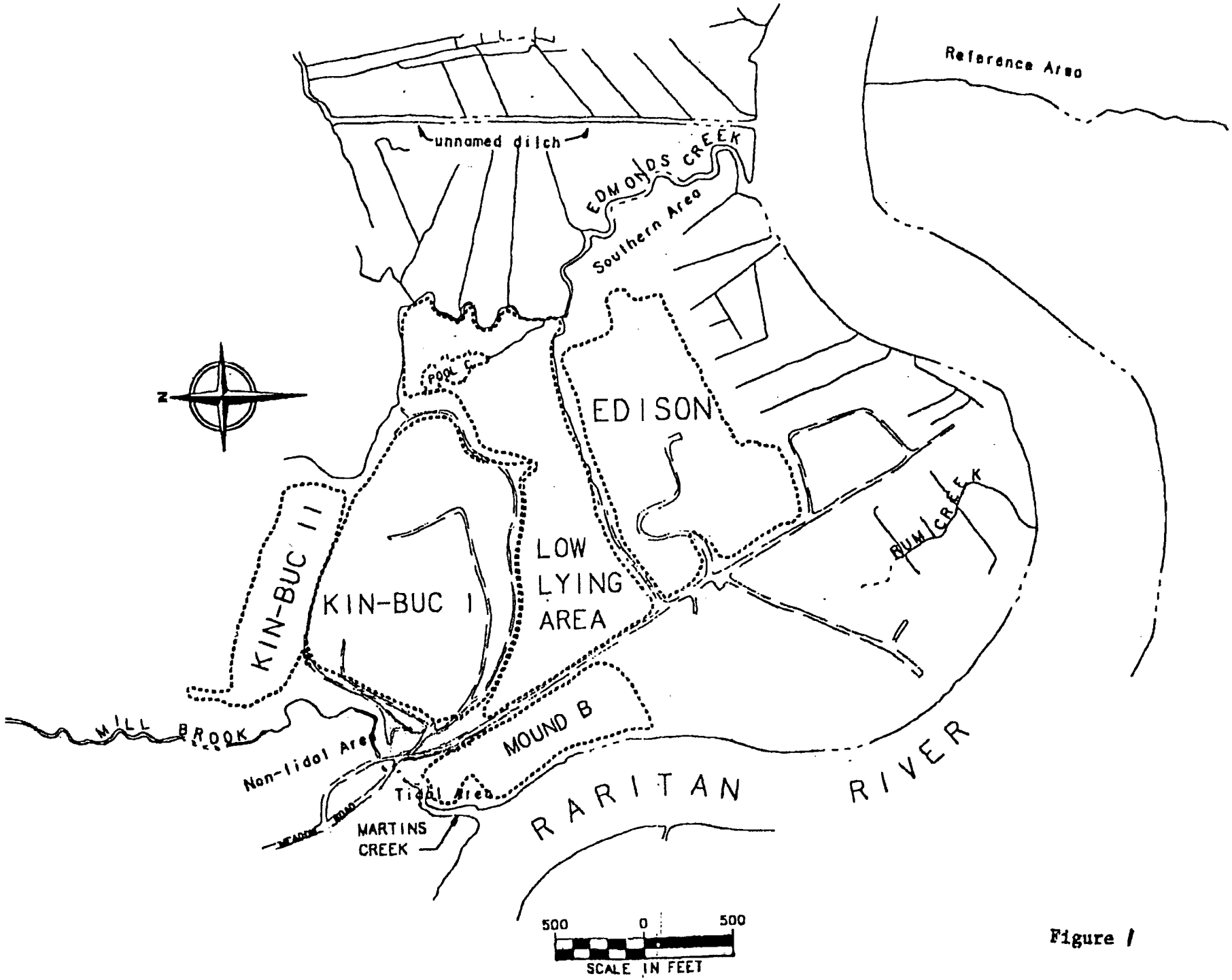

Figure 1